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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,050	07/31/2001	Karthik Ramasubramanian	CR00257M	4250
22917	7590	11/30/2004	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			MUNOZ, GUILLERMO	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/919,050

Applicant(s)

RAMASUBRAMANIAN ET AL.

Examiner

Guillermo Munoz

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 17-20, 22, 24-30 and 32 is/are rejected.
- 7) ☒ Claim(s) 14, 16, 21, 23, and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/31/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6, 8, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Blasco Claret et al..

Regarding Claim 1; Blasco Claret et al. teach the claimed subject matter “computing ensemble correlation function... valid sampling region” in claim 1 as follows. Blasco Claret et al. teach computing a maximum correlation using two identical synchronization symbols, note paragraph 0021. Determining a sampling point in the “flat zone” of the correlation peak, note paragraph 0021. The size of the “flat zone” being equal to the number of samples in the cyclic prefix without inter-symbol interference, note paragraph 0021.

Regarding claim 6; Blasco Claret et al. further teach the claimed subject matter, note paragraph 0021.

Regarding claim 8, see claim 1.

Regarding claim 12; Blasco Claret et al. further teach the claimed subject matter, note paragraph 0004.

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Claims 15, 17-19, 22, 24-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al..

Regarding claim 15; Sato et al. teach the claimed subject matter “computing an ensemble correlation function...to estimate the delay-spread” in claim 15 as follows. Sato et al. illustrate in Figure 8, a group of correlations generated in Delay Time Detector element 3 of Figure 6. Sato et al. teach using the generated correlation results for estimating the delay-spread of the signal, note Col. 2, lines 50-53.

Regarding claim 17, Sato et al. further teach the claimed subject matter, note element 4 of Figure 6 and Col. 3, lines 17-20.

Regarding claim 18, Sato et al. further teach the claimed subject matter, note Col. 7, lines 49-56.

Regarding claim 19, Sato et al. further teach the claimed subject matter, note Figure 8 and Col. 12, lines 23-29.

Regarding claim 22, see claim 15.

Regarding claim 24, see claim 17.

Regarding claim 25, see claim 19.

Regarding claim 26, Sato et al. further teach the claimed subject matter, note elements 1 and 2 of Figure 1.

Regarding claim 27, Sato et al. further teach the claimed subject matter, note elements 1 and 2 of Figure 1.

Regarding claim 28, see claim 15.

Regarding claim 29, see claim 28.

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Regarding claim 30, Sato et al. further teach the claimed subject matter "one or more coefficients" by the inherency of the operation of the filter (Figure 6, element 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 7, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blasco Claret et al. in view of Taira.

Regarding claim 2; Blasco Claret et al. disclose an OFDM receiver having a means for determining a maximum correlation of a received signal, however, Blasco Claret et al. do not explicitly state comparing the correlation result to a threshold.

Taira teaches a similar OFDM receiver having a method for determining a correlation threshold as a function of the maximum correlation value, note Fig. 3 and Col. 5, lines 15-23.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Blasco Claret et al.'s correlation with Taira's method of comparing the correlation results to a threshold generated from a correlation peak calculated beforehand, since Taira suggests, in Col. 5, lines 58-64 that the result of this would improve the reception performance.

Regarding claim 7, see claim 2.

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Regarding claim 11, see claim 2.

Claims 3-5, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blasco Claret et al..

Regarding claim 3; as applied to claim 1, Blasco Claret et al. disclose an OFDM receiver having means for determining a maximum correlation of a received signal, however, Blasco Claret et al. do not explicitly state filtering the correlation output.

It would have been obvious to one having ordinary skill in the art to modify Blasco Claret et al.'s maximum detector with a filter averaging the correlation signal in order to remove any residual or noise in the output signal.

Regarding claim 4; as applied to claim 3, it would have been obvious to one having ordinary skill in the art to filter the correlation output prior to determining the region, since to do so would have been the same as provided in reference to claim 3.

Regarding claim 5; as applied to claim 3, a filter having noise reduction as a "median filter" is functionally the same.

Regarding claim 9, see claim 3.

Regarding claim 10, see claim 8.

Regarding claim 13; Blasco Claret et al. teach the use of the receiver in an OFDM network.

It would have been obvious to one having ordinary skill in the art at the time of the invention to implement the receiver as wireless to allow an end user using such a device the enhanced capability to move from one location to the other.

Claims 20 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. in view of Taira.

Regarding claim 20; in view of claim 19, Sato disclose comparing the correlation results to a predetermined threshold, however, Sato et al. do not disclose the method of determining the threshold value.

Taira teach a similar OFDM receiver having a method for determining a correlation threshold as a function of the maximum correlation value, which is detected beforehand, note Fig. 3 and Col. 5, lines 15-23.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to determine the threshold from a correlation peak calculated beforehand, since Taira suggest, in Col. 5, lines 58-64 that the result of this would improve the reception performance.

Regarding claim 32; Sato disclose utilizing a delay time estimating symbol to estimate the received signal interference, however, Sato does not teach using the delay estimate to determine at least one sample.

Taira teach a similar OFDM receiver having a method for determining a sampling position based on a received signals multi-path estimation, note Col. 1, line 13-26.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Sato's multi-path estimation with Taira's determine the sampling position from a correlation peak, since Taira suggest, in Col. 2, lines 13-26 that the result of this would improve the reception performance in a multi-path environment.

Allowable Subject Matter

Claims 14, 16, 21, 23, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Claims 14, 16, 21, 23, and 31 are considered allowable because the present invention comprises a method for timing recovery in a communications system by computing a correlation function from a plurality of symbols, filtering the correlation outputs, and determining a valid sampling region based on the width of the plateau of the filtered correlation function output. Then, determining at least sample point based on the valid sampling region.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Munoz whose telephone number is 571-272-3045.


The examiner can normally be reached on Monday-Friday 8:30a.m-4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



GM
November 26, 2004



JEAN B. CORRIELUS
PRIMARY EXAMINER
11/29/04